

Claims

- [c1] 1. In an electric vehicle having an energy storage device, an indicator system comprising:
a processing source to calculate a normalized amount of power available from the energy storage device, and;
an indicator to indicate the normalized amount of power available from the energy storage device.
- [c2] 2. The system of claim 1 wherein the energy source is a battery which provides power for use in providing electric assist and the processing source calculates the normalized amount of power available from the battery as a normalized battery state of charge (SOC) such that the indicator indicates the normalized SOC.
- [c3] 3. The system of claim 2 wherein the normalized battery SOC is calculated based in part on a calculated battery SOC, a minimum battery SOC offset, and a maximum SOC offset.
- [c4] 4. The system of claim 3 wherein the processing source further comprises a battery discharge limit (DCL) override, wherein the override forces the normalized battery SOC to zero in response to the DCL being less than a

predefined threshold.

- [c5] 5. The system of claim 1 wherein the energy source is a battery which provides power for use in providing electric assist and the processing source calculates the normalized amount of power available from the battery as a normalized battery discharge limit (DCL) such that the indicator indicates the normalized DCL.
- [c6] 6. The system of claim 5 wherein the normalized battery DCL is calculated based in part on a calculated battery DCL, a minimum battery DCL offset, and a maximum DCL offset.
- [c7] 7. The system of claim 6 wherein the processing source further comprises a battery state of charge (SOC) override, wherein the override forces the normalized battery DCL to zero in response to the DCL being less than a predefined threshold.
- [c8] 8. The system of claim 1 wherein the energy source is a battery which provides power for use in providing electric assist and the processing source calculates the normalized amount of power available from the battery as a minimum percentage selected from the group comprising a normalized battery of state of charge (SOC) and a battery percentage discharge limit (DCL).

[c9] 9. The system of claim 8 wherein the normalized battery SOC is calculated based in part on a calculated battery SOC, a minimum battery SOC offset, and a maximum SOC offset, and wherein the normalized battery DCL is calculated based in part on a calculated battery DCL, a minimum battery DCL offset, and a maximum DCL offset.

[c10] 10. The system of claim 1 wherein the normalized amount of power available from the energy storage device is a range selected from the group comprising below-normal battery charge, normal battery charge, and above-normal battery charge.

[c11] 11. The system of claim 10 wherein the range is based on a normalized battery state of charge (SOC).

[c12] 12. The system of claim 10 wherein the range is based on a normalized percentage discharge limit (DCL).

[c13] 13. The system of claim 1 wherein the indicator includes a percentage display for indicating the normalized amount of power available from the energy storage device.

[c14] 14. The system of claim 1 wherein the energy source is a battery which provides power for use in providing elec-

tric assist and the indicator includes an illuminable light that is illuminated based on the normalized amount of power available from the battery, wherein electric assist is unavailable if the light is illuminated and electric assist is available if the light is unilluminated.

- [c15] 15. The system of claim 14 wherein the normalized amount of power available from the energy storage device is a raw discharge limit (DCL) temperature based threshold, wherein the light is unilluminated when the raw DCL is greater than the threshold and the light is illuminated when the raw DCL is less than the threshold.
- [c16] 16. The system of claim 15 wherein the raw DCL temperature based threshold includes a hysteresis offset threshold such that the raw DCL must surpass the hysteresis offset threshold when the light is illuminated in order to unilluminate the light, wherein the hysteresis offset threshold is greater than the raw DCL temperature based threshold.
- [c17] 17. The system of claim 15 wherein the raw DCL temperature based threshold varies according to a battery temperature.
- [c18] 18. A method to communicate an amount of available battery power to a driver of a vehicle having electric as-

sist, wherein the amount of available battery power is used by the driver to make a driving decisions with respect to electric assist, the method comprising: calculating a raw power value for the battery based on operating parameters of the battery; normalizing the raw power value to produce a displayable power value; and displaying the power value in a position viewable by the driver.

[c19] 19. The method of claim 17 wherein the displayable power value is a normalized battery state of charge (SOC) such that the indicator indicates the normalized SOC, wherein the normalized battery SOC is calculated based in part on a calculated battery SOC, a minimum battery SOC offset, and a maximum SOC offset.

[c20] 20. The method of claim 17 wherein the displayable power value is a normalized battery calculating discharge limit (DCL) such that the indicator indicates the normalized DCL, wherein the normalized battery DCL is calculated based in part on a calculated battery DCL, a minimum battery DCL offset, and a maximum DCL offset.